GROUND ENGINEERING

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Date 26 February 2015
Our ref SJF/C13359A

Terry Dacombe Architects
Unit 306, Mare Street Studios
203-213 Mare Street
London
E8 3QE

Attention of Terry Dacombe

Dear Sirs,

61 Bayham Place, London NW1 – further monitoring and groundwater testing

Introduction

Further to emailed comments to our site investigation report C13359 dated September 2014 from the Contaminated Land Officer of the London Borough of Camden; our response dated 15th January 2015; subsequent discussions; and instruction from the architect, further investigation works were undertaken at the above site on 13th February 2015.

Site Work

The site work undertaken in 2014 included the installation of a 38mm diameter standpipe to 5.00m depth in borehole WS 1, which was subsequently monitored on a single occasion prior to the issue of the site investigation report.

Another return visit was made by a technician on 13th February 2015 in order to monitor the water level and recover representative samples of the groundwater, at the top and base of the water column within the installation. The water samples were obtained using a low-flow water pump with nominated Teflon bladder samplers. The samples were poured into glass vials and amber glass bottles, and taken directly to the analysing laboratory.

In addition, methane, carbon dioxide and oxygen gas levels were determined in the window sample standpipe, prior to the water sampling. Ambient pressures and flow rates were recorded, together with volatile organic compounds (VOCs) using a Mini-Rae 3000 PID meter.

The gas/groundwater results of this second visit are presented at the rear of this report.

Laboratory Testing

The results of the chemical tests are presented at the rear of this report.

The two water samples taken from the installation were tested for concentrations of arsenic, cadmium, chromium, lead, mercury, selenium, nickel and benzo[a]pyrene, together with speciated polyaromatic hydrocarbons (PAH), boron, copper and zinc, phenols, total and free cyanide, sulphate, sulphide and pH. The water samples were also tested for speciated total petroleum hydrocarbons (TPH CWG), volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

Ground, Groundwater and Gas Conditions Summary

The ground conditions encountered by the 2014 investigation were as expected with a cover of made ground directly underlain by the solid geology of the London Clay, which was found to at least 6m depth and is known to continue to about 27m depth beneath this part of Camden. The cover of made ground was 1.40m thick in borehole WS 1.

The 6.00m deep borehole was dry during boring and on completion of borehole WS 1 in August 2014. A water level was subsequently recorded at 2.82m below ground floor level in the 5.00m deep borehole standpipe on 3rd September 2014.

The further return monitoring visit on 13th February 2015 recorded a similar water level in WS 1 at 2.89m depth.

There was no visual or olfactory evidence of hydrocarbon contamination in the exploratory holes.

The PID testing of the installation during the further monitoring visit in 2015 recorded a VOC result of <1ppm.

The September 2014 and February 2015 return visits also recorded concentrations of landfill type gases (methane, carbon dioxide and oxygen) in the WS 1 standpipe. The recorded concentrations of methane were less than 0.1% on both occasions, whilst the carbon dioxide levels recorded ranged between 0.1% and 0.3%. The recorded oxygen concentrations within the standpipe were comparable with atmospheric conditions. In-situ measurement confirmed a negligible gas emission rate with a recorded flow rate of <0.1l/hr in all instances.

Comments on the Groundwater Conditions in Relation to Basement Construction

Although the 6m deep borehole was dry during boring and on completion within the practically impervious London, water levels were recorded in the borehole standpipe when it was checked subsequently. The water levels were recorded at about 2.80m below ground floor level on both occasions and would appear to indicate that the groundwater level beneath this site lies within the London Clay stratum at this level, just above the proposed basement floor level of 3.00m below ground level.

The comments provided in the September 2014 report in respect of the potential risk of flotation; the need to waterproof the completed basement structure to prevent the ingress of groundwater and downward percolating surface water; and the likely scale of dewatering required so that construction takes place in the 'dry', are therefore unchanged by the findings of this further monitoring visit.

Comparison of Water Analysis with Inorganic Drinking Water Standards

The two water samples recovered were analysed in the laboratory for characterisation purposes. The primary assessment tool employed for the generic screening of samples for the protection of 'Controlled Waters' consists of the Statutory Instrument 2000 No.3184 'The Water Supply (Water Quality) Regulations 2000'. This amends the 1991 version, which provides a standard of 10µg/l for dissolved or emulsified hydrocarbons represented by TPH in the laboratory analysis. There is no amendment indicated in Statutory Instrument 2000 No.3184 and so in the absence of an amendment or update we refer to the 1991 standard, which is generally accepted.

The fractions of test results that exceed these levels are summarised overleaf in Table 1.

Table 1: Comparison of Chemical Test Results with Water Supply Regulations

Determinand	Min. Value	Max. Value	The Water Supply (Water Quality) Regulations Maximum Concentration/Value for Consumers Taps	Fraction of Samples Exceeding Water Supply Regulation
Arsenic (total) µg/l	2.8	3.1	10 µg/l	**0/2**
Boron (Water Soluble) µg/l	960	1100	1000 µg/l	**1/2**
Cadmium (total) µg/l	0.21	0.22	5.0 µg/l	**0/2**
Chromium (total) µg/l	<1.0	7.9	50 µg/l	**0/2**
Copper (total) µg/l	4.6	9.9	2000 µg/l	**0/2**
Cyanide (total) mg/l	<0.05	<0.05	0.05 mg/l	**0/2**
Lead (total) µg/l	5.4	8.6	25 µg/l	**0/2**
Mercury (total) µg/l	<0.50	<0.50	1.0 µg/l	**0/2**
Nickel (total) µg/l	5.9	8.0	20 µg/l	**0/2**
pH value	7.9	8.0	6.5 minimum 10.0 maximum	**0/2**
Phenols mg/l	<0.03	<0.03	0.0005 mg/l	**-/2**
Selenium (total) µg/l	4.2	11	10 µg/l	**0/2**
Sulphate (soluble) mg/l	1900	2400	250 mg/l	**2/2**
Sulphide mg/l	<0.05	<0.05	No limit	**0/2**
Zinc (total) µg/l	87	110	5000 µg/l	**0/2**
PAHs µg/l	4.6	67	0.10 µg/l	**2/2**
Naphthalene µg/l	4.6	63	0.10 µg/l	**2/2**
TPH µg/l	<10	<10	10 µg/l	**0/2**

With regard to the water quality recorded, all of the levels recorded did not exceed drinking water standards with the exception of boron in the deeper sample, sulphate in both samples and total PAH in the two samples tested from the borehole WS 1 installation.

The speciated PAH results were almost all below the detection limits of the laboratory with the exception of naphthalene (both samples) and acenaphthylene (deeper sample, 3.7µg/l) - a naphthalene derivative, and that the naphthalene results of 4.6µg/l (shallow sample) and 67µg/l (deeper sample) accounted for almost all of the total PAH recorded. The absence of naphthalene within the soil samples tested (both <0.10mg/kg) from the cover of made ground would indicate that the made ground is not the source of the elevated concentrations of naphthalene in the groundwater.

The TPH, VOC and SVOC results were all below the laboratory's detection limits, and so can be regarded as not being present within the groundwater beneath this site.

The above described results are considered to characterise the near surface groundwater beneath this site and are considered to represent evidence of groundwater impacted by PAH, specifically naphthalene, contamination.

Most naphthalene is derived from coal tar and once was the primary ingredient of moth balls. It would appear unlikely that the previous various uses of the site (plating factory, smoking pipe factory, a plastics factory, a shoe repairers, and a printers) would have produced or stored naphthalene.

Updated Conceptual Model

The conceptual model presented as Table 6 on page 33 of the original site investigation report C13359 (September 2014) remains unaltered by the findings of this supplementary investigation and the updated conceptual model is presented below. The risk to the water environment from the soil beneath the site remains as very low.

Receptors	Pathway	Estimated Potential for Linkage with Contaminant Sources			
		Drainage/ Buildings	Soil Beneath Site	Soil Gas	Ground Contamination Outside Site Boundary
Human Health – ground workers	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	Moderate	Moderate	Very Low	Very Low
Human Health – users of completed development	Ingestion and Inhalation of contaminated Soil, Dust and Vapour	N/A	Low (landscaping) to Moderate (private gardens)	Very Low	Very Low
Water Environment	Migration through ground into surface water or groundwater	N/A	Very Low	Very Low	Low
Flora	Vegetation on site growing on contaminated soil.	N/A	Very Low	Very Low	Very Low
Building Materials	Contact with contaminated soil	N/A	Very Low	Very Low	Very Low

Key

RISK	Definition
Very High	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, or, there is evidence that severe harm to a designated receptor is currently happening. The risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) and remedial works may be necessary in the short term and likely over the long term.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Low	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very Low	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.
N/A	Not Applicable because the proposed development will remove the source.

Comments on Ground Contamination in Relation to Proposed Redevelopment

Anticipated exposure scenarios relating to the site and future redevelopment works including remedial options as applicable, in the context of the conceptual model, consequently remain unchanged from those previously presented in September 2014, and are summarised below.

The exploratory holes penetrated up to 1.40m of made ground across this small site. The made ground contained elevated concentrations of arsenic, lead and benzo[a]pyrene that exceeded residential soil screening criteria. None of the other contaminants tested for exceeded their respective screening values for a residential end use and of those tested only lead surpassed commercial/industrial land use screening values.

The respective presence of arsenic, lead and benzo[a]pyrene contamination within the made ground and PAH (naphthalene) within the groundwater indicates that there is a moderate risk that a pathway could develop affecting groundworkers during the construction phase of development.

No special precautions would be required during the development of the site by workers who may come into contact with the soil during groundworks, providing standard precautions are adopted which should generally include the procedures given by the Health and Safety Executive (The Blue Book) HS(G)66.

For the protection of workers during groundworks the following is recommended:
a) Limit repeated or prolonged skin contact with soils by wearing gloves with sleeves rolled down.
b) Washing facilities should be made available to groundworkers, so as to minimise the potential for inadvertent ingestion of soil.
c) If any soils are revealed which are different to those encountered by this ground investigation, the advice of a specialist should be sought in view of classifying the material and ascertaining its risk to groundworkers.
d) Dust suppression measures such as 'damping down', could also be adopted to prevent the spread of soil contaminants.

The risk of the encountered ground contamination affecting the site users when present beneath buildings and permanent areas of hardstanding would be considered to be very low. This is because it would be highly unlikely that the general site users would normally be able to penetrate the basement walls and floor, which would be necessary for them to uncover any contaminated soils beneath the site. It would therefore be prudent not to retain the made ground at the surface within garden areas, should these be contemplated.

The gas monitoring has determined that a Wilson and Card Characteristic Situation 1 would apply and that no special precautions are required to protect the proposed development from ingress of soil gases.

Based on the available evidence it is considered that measures to prevent the ingress of 'organic' vapours into the building, such as a vapour proof membrane, will not be necessary.

Significant soil contamination was not identified by the investigative works; the water table was present at about 2.80m below ground level within the practically impervious

Unproductive stratum of the London Clay. Vertical migration of any naphthalene in the groundwater is therefore considered unlikely.

The naphthalene results in the groundwater are considered to represent residual levels of naphthalene contamination of unknown origin and may be considered representative of background concentrations beneath this part of Camden.

It is considered unlikely that the proposed residential redevelopment would impact the quality of the water environment, indeed the removal of made ground during basement excavation would be considered to improve the situation on this site.

Conclusions

Summary of Proposed Works

The proposed redevelopment is to include the construction of a single level basement. The existing site is detailed on the site plan at the rear of the 2014 report. The proposed final site layout will need to be provided by the Engineer in due course. This plan will need to clearly identify areas of gardens and soft landscaping, in the highly unlikely event that any are envisaged. The intended end use is considered to be comparable to a residential setting.

Remediation

Remediation of the soils beneath the site, in respect of the proposed redevelopment, is not considered necessary as the basement excavation will remove all of the made ground from beneath the site. In addition, the basement walls and floor will prevent contact between any contaminated ground and the site end users. In that regard the recommendations of this report do not differ from those previously stated.

GROUND ENGINEERING LIMITED

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Groundwater/Gas Monitoring Record

GROUND ENGINEERING LIMITED

Site: 61 Bayham Place. London NW1

Report Ref: C13359

Date	Borehole	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	VOCs (ppm)	Atmosph. Pressure (mb)	Depth of Well (m)	Depth to Groundwater (m)
		Peak	Steady	Peak	Steady	Min.	Max.					
03/09/14	WS 1	<0.1	<0.1	0.1	<0.1	20.3	20.3	<0.1	-	1021	5.00	2.82
13/02/15	WS 1	<0.1	<0.1	0.3	0.3	20.7	20.7	<0.1	<1	996	5.00	2.89

Equipment: GasLog GFM 430, 50m tape dipmeter.

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UKAS TESTING
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Final Report

Report Number:	15-03904 Issue-1
Initial Date of Issue:	24-Feb-2015
Client:	Ground Engineering Limited
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA
Contact(s):	Steve Fleming
Project:	C13359 61 Bayham Place, London, NW1

Quotation No.:		**Date Received:**	20-Feb-2015
Order No.:	C13359	**Date Instructed:**	20-Feb-2015
No. of Samples:	2		
Turnaround: (Wkdays)	3	**Results Due Date:**	24-Feb-2015
Date Approved:	24-Feb-2015		

Approved By:

Details: Keith Jones, Technical Manager

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Results Summary - Water

Project: C13359 61 Bayham Place, London, NW1

Client: Ground Engineering Limited					Chemtest Job No.:	15-03904	15-03904
Quotation No.:					Chemtest Sample ID.:	105347	105348
Order No.: C13359					Client Sample Ref.:	WS1	WS1
					Client Sample ID.:	W1	W2
					Sample Type:	WATER	WATER
					Top Depth (m):	2.89	5.00
					Bottom Depth(m):		
					Date Sampled:	13-Feb-15	13-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
pH	U	1010				7.9	8.0
Boron (Dissolved)	U	1450	µg/l	20		960	1100
Sulphate	U	1220	mg/l	1		1900	2400
Cyanide (Free)	U	1300	mg/l	0.05		< 0.050	< 0.050
Cyanide (Total)	U	1300	mg/l	0.05		< 0.050	< 0.050
Sulphide	U	1325	mg/l	0.05		< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1		2.8	3.1
Cadmium (Dissolved)	U	1450	µg/l	0.08		0.22	0.21
Chromium (Dissolved)	U	1450	µg/l	1		< 1.0	7.9
Copper (Dissolved)	U	1450	µg/l	1		9.9	4.6
Mercury (Dissolved)	U	1450	µg/l	0.5		< 0.50	< 0.50
Nickel (Dissolved)	U	1450	µg/l	1		8.0	5.9
Lead (Dissolved)	U	1450	µg/l	1		5.4	8.6
Selenium (Dissolved)	U	1450	µg/l	1		11	4.2
Zinc (Dissolved)	U	1450	µg/l	1		87	110
Acenaphthene	N	1790	µg/l	0.5		< 0.50	< 0.50
Acenaphthene	N	1700	µg/l	0.01		< 0.010	< 0.010
Acenaphthylene	N	1790	µg/l	0.5		< 0.50	< 0.50
Acenaphthylene	N	1700	µg/l	0.01		< 0.010	3.7
Anthracene	N	1790	µg/l	0.5		< 0.50	< 0.50
Anthracene	N	1700	µg/l	0.01		< 0.010	< 0.010
Benzo[a]anthracene	N	1790	µg/l	0.5		< 0.50	< 0.50
Benzo[a]anthracene	N	1700	µg/l	0.01		< 0.010	< 0.010
Benzo[a]pyrene	N	1790	µg/l	0.5		< 0.50	< 0.50
Benzo[a]pyrene	N	1700	µg/l	0.01		< 0.010	< 0.010
Benzo[b]fluoranthene	N	1790	µg/l	0.5		< 0.50	< 0.50
Benzo[b]fluoranthene	N	1700	µg/l	0.01		< 0.010	< 0.010
Benzo[g,h,i]perylene	N	1790	µg/l	0.5		< 0.50	< 0.50
Benzo[g,h,i]perylene	N	1700	µg/l	0.01		< 0.010	< 0.010
Benzo[k]fluoranthene	N	1790	µg/l	0.5		< 0.50	< 0.50
Benzo[k]fluoranthene	N	1700	µg/l	0.01		< 0.010	< 0.010
Chrysene	N	1790	µg/l	0.5		< 0.50	< 0.50
Chrysene	N	1700	µg/l	0.01		< 0.010	< 0.010

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Results Summary - Water

Project: C13359 61 Bayham Place, London, NW1

Client: Ground Engineering Limited					Chemtest Job No.:	15-03904	15-03904
Quotation No.:					Chemtest Sample ID.:	105347	105348
Order No.: C13359					Client Sample Ref.:	WS1	WS1
					Client Sample ID.:	W1	W2
					Sample Type:	WATER	WATER
					Top Depth (m):	2.89	5.00
					Bottom Depth(m):		
					Date Sampled:	13-Feb-15	13-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Dibenz(a,h)Anthracene	N	1790	µg/l	0.5		< 0.50	< 0.50
Dibenz(a,h)Anthracene	N	1700	µg/l	0.01		< 0.010	< 0.010
Fluoranthene	N	1790	µg/l	0.5		< 0.50	< 0.50
Fluoranthene	N	1700	µg/l	0.01		< 0.010	< 0.010
Fluorene	N	1790	µg/l	0.5		< 0.50	< 0.50
Fluorene	N	1700	µg/l	0.01		< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.5		< 0.50	< 0.50
Indeno(1,2,3-c,d)Pyrene	N	1700	µg/l	0.01		< 0.010	< 0.010
Naphthalene	N	1790	µg/l	0.5		< 0.50	< 0.50
Naphthalene	N	1700	µg/l	0.01		4.6	63
Phenanthrene	N	1790	µg/l	0.5		< 0.50	< 0.50
Phenanthrene	N	1700	µg/l	0.01		< 0.010	< 0.010
Pyrene	N	1790	µg/l	0.5		< 0.50	< 0.50
Pyrene	N	1700	µg/l	0.01		< 0.010	< 0.010
Total Of 16 PAH's	N	1700	µg/l	0.2		4.6	67
Total Phenols	U	1920	mg/l	0.03		< 0.030	< 0.030
Hardness	U	1415	mg/l	15		1800	2500
Aliphatic TPH >C5-C6	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.1		< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.1		< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5		< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.1		< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.1		< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.1		< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.1		< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.1		< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.1		< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.1		< 0.10	< 0.10

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Results Summary - Water

Project: C13359 61 Bayham Place, London, NW1

Client: Ground Engineering Limited					Chemtest Job No.:	15-03904	15-03904
Quotation No.:					Chemtest Sample ID.:	105347	105348
Order No.: C13359					Client Sample Ref.:	WS1	WS1
					Client Sample ID.:	W1	W2
					Sample Type:	WATER	WATER
					Top Depth (m):	2.89	5.00
					Bottom Depth(m):		
					Date Sampled:	13-Feb-15	13-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aromatic TPH >C35-C44	N	1675	µg/l	0.1		< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5		< 5.0	< 5.0
Total Petroleum Hydrocarbons	U	1675	µg/l	10		< 10	< 10
Dichlorodifluoromethane	U	1760	µg/l	1		< 1.0	< 1.0
Chloromethane	U	1760	µg/l	1		< 1.0	< 1.0
Vinyl Chloride	N	1760	µg/l	1		< 1.0	< 1.0
Bromomethane	U	1760	µg/l	5		< 5	< 5
Chloroethane	U	1760	µg/l	2		< 2.0	< 2.0
Trichlorofluoromethane	U	1760	µg/l	1		< 1.0	< 1.0
1,1-Dichloroethene	U	1760	µg/l	1		< 1.0	< 1.0
Trans 1,2-Dichloroethene	U	1760	µg/l	1		< 1.0	< 1.0
1,1-Dichloroethane	U	1760	µg/l	1		< 1.0	< 1.0
cis 1,2-Dichloroethene	U	1760	µg/l	1		< 1.0	< 1.0
Bromochloromethane	U	1760	µg/l	5		< 5.0	< 5.0
Trichloromethane	U	1760	µg/l	1		< 1.0	< 1.0
1,1,1-Trichloroethane	U	1760	µg/l	1		< 1.0	< 1.0
Tetrachloromethane	U	1760	µg/l	1		< 1.0	< 1.0
1,1-Dichloropropene	U	1760	µg/l	1		< 1.0	< 1.0
Benzene	U	1760	µg/l	1		< 1.0	< 1.0
1,2-Dichloroethane	U	1760	µg/l	2		< 2.0	< 2.0
Trichloroethene	N	1760	µg/l	1		< 1.0	< 1.0
1,2-Dichloropropane	U	1760	µg/l	1		< 1.0	< 1.0
Dibromomethane	U	1760	µg/l	10		< 10	< 10
Bromodichloromethane	U	1760	µg/l	5		< 5.0	< 5.0
cis-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10
Toluene	U	1760	µg/l	1		< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	1760	µg/l	10		< 10	< 10
1,1,2-Trichloroethane	U	1760	µg/l	10		< 10	< 10
Tetrachloroethene	U	1760	µg/l	1		< 1.0	< 1.0
1,3-Dichloropropane	U	1760	µg/l	2		< 2.0	< 2.0
Dibromochloromethane	U	1760	µg/l	10		< 10	< 10
1,2-Dibromoethane	U	1760	µg/l	5		< 5.0	< 5.0
Chlorobenzene	N	1760	µg/l	1		< 1.0	< 1.0

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Client: Ground Engineering Limited					Chemtest Job No.:	15-03904	15-03904
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					Client Sample ID.:	W1	W2
					Sample Type:	WATER	WATER
					Top Depth (m):	2.89	5.00
					Bottom Depth(m):		
					Date Sampled:	13-Feb-15	13-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2		< 2.0	< 2.0
Ethylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
m & p-Xylene	U	1760	µg/l	1		< 1.0	< 1.0
o-Xylene	U	1760	µg/l	1		< 1.0	< 1.0
Styrene	U	1760	µg/l	1		< 1.0	< 1.0
Tribromomethane	U	1760	µg/l	1		< 1.0	< 1.0
Isopropylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
Bromobenzene	U	1760	µg/l	1		< 1.0	< 1.0
1,2,3-Trichloropropane	N	1760	µg/l	50		< 50	< 50
N-Propylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
2-Chlorotoluene	U	1760	µg/l	1		< 1.0	< 1.0
1,3,5-Trimethylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
4-Chlorotoluene	U	1760	µg/l	1		< 1.0	< 1.0
Tert-Butylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
1,2,4-Trimethylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
Sec-Butylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
1,3-Dichlorobenzene	N	1760	µg/l	1		< 1.0	< 1.0
4-Isopropyltoluene	U	1760	µg/l	1		< 1.0	< 1.0
1,4-Dichlorobenzene	U	1760	µg/l	1		< 1.0	< 1.0
N-Butylbenzene	U	1760	µg/l	1		< 1.0	< 1.0
1,2-Dichlorobenzene	U	1760	µg/l	1		< 1.0	< 1.0
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50		< 50	< 50
1,2,4-Trichlorobenzene	U	1760	µg/l	1		< 1.0	< 1.0
Hexachlorobutadiene	U	1760	µg/l	1		< 1.0	< 1.0
1,2,3-Trichlorobenzene	U	1760	µg/l	2		< 2.0	< 2.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1		< 1.0	< 1.0
N-Nitrosodimethylamine	N	1790	µg/l	0.5		< 0.50	< 0.50
Phenol	N	1790	µg/l	0.5		< 0.50	< 0.50
2-Chlorophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.5		< 0.50	< 0.50
1,3-Dichlorobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50
1,4-Dichlorobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50
1,2-Dichlorobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50

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Results Summary - Water

Project: C13359 61 Bayham Place, London, NW1

Client: Ground Engineering Limited					Chemtest Job No.:	15-03904	15-03904
Quotation No.:					Chemtest Sample ID.:	105347	105348
Order No.: C13359					Client Sample Ref.:	WS1	WS1
					Client Sample ID.:	W1	W2
					Sample Type:	WATER	WATER
					Top Depth (m):	2.89	5.00
					Bottom Depth(m):		
					Date Sampled:	13-Feb-15	13-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
2-Methylphenol (o-Cresol)	N	1790	µg/l	0.5		< 0.50	< 0.50
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.5		< 0.50	< 0.50
Hexachloroethane	N	1790	µg/l	0.5		< 0.50	< 0.50
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Methylphenol	N	1790	µg/l	0.5		< 0.50	< 0.50
Nitrobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50
Isophorone	N	1790	µg/l	0.5		< 0.50	< 0.50
2-Nitrophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
2,4-Dimethylphenol	N	1790	µg/l	0.5		< 0.50	< 0.50
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.5		< 0.50	< 0.50
2,4-Dichlorophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
1,2,4-Trichlorobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Chloroaniline	N	1790	µg/l	0.5		< 0.50	< 0.50
Hexachlorobutadiene	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Chloro-3-Methylphenol	N	1790	µg/l	0.5		< 0.50	< 0.50
2-Methylnaphthalene	N	1790	µg/l	0.5		< 0.50	< 0.50
Hexachlorocyclopentadiene	N	1790	µg/l	0.5		< 0.50	< 0.50
2,4,6-Trichlorophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
2,4,5-Trichlorophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
2-Chloronaphthalene	N	1790	µg/l	0.5		< 0.50	< 0.50
2-Nitroaniline	N	1790	µg/l	0.5		< 0.50	< 0.50
Dimethylphthalate	N	1790	µg/l	0.5		< 0.50	< 0.50
2,6-Dinitrotoluene	N	1790	µg/l	0.5		< 0.50	< 0.50
3-Nitroaniline	N	1790	µg/l	0.5		< 0.50	< 0.50
Dibenzofuran	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Chlorophenylphenylether	N	1790	µg/l	0.5		< 0.50	< 0.50
2,4-Dinitrotoluene	N	1790	µg/l	0.5		< 0.50	< 0.50
Diethyl Phthalate	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Nitroaniline	N	1790	µg/l	0.5		< 0.50	< 0.50
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
Azobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Bromophenylphenyl Ether	N	1790	µg/l	0.5		< 0.50	< 0.50
Hexachlorobenzene	N	1790	µg/l	0.5		< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Results Summary - Water

Project: C13359 61 Bayham Place, London, NW1

Client: Ground Engineering Limited					Chemtest Job No.	15-03904	15-03904
Quotation No.:					Chemtest Sample ID.:	105347	105348
Order No.: C13359					Client Sample Ref.:	WS1	WS1
					Client Sample ID.:	W1	W2
					Sample Type:	WATER	WATER
					Top Depth (m):	2.89	5.00
					Bottom Depth(m):		
					Date Sampled:	13-Feb-15	13-Feb-15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Pentachlorophenol	N	1790	µg/l	0.5		< 0.50	< 0.50
Carbazole	N	1790	µg/l	0.5		< 0.50	< 0.50
Di-N-Butyl Phthalate	N	1790	µg/l	0.5		< 0.50	< 0.50
Butylbenzyl Phthalate	N	1790	µg/l	0.5		< 0.50	< 0.50
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.5		< 0.50	< 0.50
Di-N-Octyl Phthalate	N	1790	µg/l	0.5		< 0.50	< 0.50
4-Nitrophenol	N	1790	µg/l	0.5		< 0.50	< 0.50

Chemtest
The right chemistry to deliver results

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container

Sample Retention and Disposal

All soil samples will be retained for a period of 60 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk